

ARCHIVES OF Biochemistry and Biophysics

Volume 113 • 1966 PERIODICAL

UNIVERSITY OF HAWAII
LIBRARY.

Executive Editors

C. H. W. Hirs
B. L. Horecker
H. S. Mason

F. F. Nord
P. K. Stumpf

H. Theorell
S. Udenfriend
W. J. Whelan

Editors

Bruce Ames
Gilbert Ashwell
Aaron Bendich
R. David Cole
Ronald W. Estabrook
Karl Folkers
David E. Green
François Gros
Lowell P. Hager
H. O. Halvorson
Osamu Hayaishi
Robert L. Hill
Frank M. Huennekens
Harvey Itano
Herman M. Kalckar
Ephraim Katchalski

Seymour Kaufman
Walter Kauzmann
Irving M. Klotz
W. Konigsberg
Luis F. Leloir
C. H. Li
F. Lynen
Henry R. Mahler
B. G. Malmström
Clement L. Markert
W. D. McElroy
A. Neuberger
L. H. Piette
Rodney R. Porter
Jesse C. Rabinowitz
Lester J. Reed

Harry Rudney
W. Schroeder
Richard S. Schweet
Michael Sela
Philip Siekevitz
M. V. Simpson
Earl R. Stadtman
Thressa C. Stadtman
F. M. Strong
Andrew G. Szent-Györgyi
Kenneth V. Thimann
S. N. Timasheff
Carleton R. Treadwell
W. W. Umbreit
Birgit Vennesland
Gregorio Weber



ACADEMIC PRESS
New York and London

Copyright© 1966, by Academic Press Inc.

ALL RIGHTS RESERVED

No part of this volume may be reproduced in any form by photostat, microfilm, or any other means, without written permission from the publishers.

Made in the United States of America

Contents of Volume 113

NUMBER 1, JANUARY 1966

ANITA A. SURAN. N-Terminal Sequence of Horse Spleen Apoferritin.....	1
W. T. ROUBAL AND A. L. TAPPEL. Damage to Proteins, Enzymes, and Amino Acids by Peroxidizing Lipids.....	5
THRESSA C. STADTMAN. Glycine Reduction to Acetate and Ammonia: Identification of Ferredoxin and Another Low Molecular Weight Acidic Protein as Components of the Reductase System.....	9
R. M. DOLP. Studies on the Proteins from Skeletal Muscle of the Bullfrog <i>Rana catesbeiana</i> . I. Actin.....	20
TAKAO MURATA, TATSUO SUGIYAMA, TAKAO MINAMIKAWA, AND T. AKAZAWA. Enzymic Mechanism of Starch Synthesis in Ripening Rice Grains. III. Mechanism of the Sucrose-Starch Conversion.....	34
T. NIHEI, M. MORRIS, AND A. L. JACOBSON. Activation and Inhibition of Myosin B Adenosine Triphosphatase by Mg^{++} and Ca^{++} at Low Concentration of KCl.....	45
JACOB A. VERPOORTE AND CYRIL M. KAY. Optical Rotatory Dispersion and Enzymic Studies on the Tryptic Digestion of Rabbit Skeletal and Cardiac Myosins and Their Macromolecular Fragments.....	53
MAHAVIR M. SIMLOT AND ROBERT E. FEENEY. Relative Reactivities of Chemically Modified Turkey Ovomucoids.....	64
M. A. ELNAGHY AND P. NORDIN. Soluble Nucleotides of Wheat and Oat Seedlings.....	72
R. M. GLAESER AND H. C. MEL. Microelectrophoretic and Enzymic Studies Concerning the Carbohydrate at the Surface of Rat Erythrocytes.....	77
SAM SOROF, EMILY M. YOUNG, REGINA A. MCBRIDE, AND CAROL B. COFFEY. Size Classes of Soluble Liver Macromolecules.....	83
JACOB SACKS, SANDRA MURPHREE, AND RICHARD BROWN. Bound Adenosine Diphosphate and Adenosine Triphosphate in Resting and Contracting Muscle.....	97
JACK GORSKI AND DONNA PADNOS. Translational Control of Protein Synthesis and the Control of Steroidogenesis in the Rabbit Ovary.....	100
BENJAMIN KAMINER. Effects of Glycerol and Sucrose on the Contraction of Glycerol-Extracted Muscle.....	107
ALFRED CHANUTIN AND RICHARD R. CURNISH. Effect of Freezing Red Blood Cells and Hemolyzates at Different Temperatures. Electrophoretic and Methemoglobin Studies.....	114
ALFRED CHANUTIN AND RICHARD R. CURNISH. Electrophoretic Studies of Hemoglobin-Methemoglobin Mixtures.....	122
F. SCHLENK AND J. L. DAINKO. Effects of Ribonuclease and Spermine on Yeast Cells.....	127
F. H. ROLA AND J. PUDLES. Studies on the Chymotryptic Inhibitor from <i>Ascaris lumbricoides</i> var. <i>suum</i> . Purification and Properties.....	134
LEON SWELL AND M. D. LAW. Labeling of Liver and Serum Cholesterol Esters after the Injection of Cholesterol-4- C^{14} and Cholesterol-4- C^{14} Esters.....	143
WILLIAM T. ROUBAL AND A. L. TAPPEL. Polymerization of Proteins Induced by Free-Radical Lipid Peroxidation.....	150
WILLIAM D. CURRIE, NANCY MCC. DAVIDIAN, W. B. ELLIOTT, NATHANIEL F. RODMAN, AND RALPH PENNIAL. Respiratory Activity of Isolated Mammalian Nuclei. III. The Reduced Nicotinamide Adenine Dinucleotide Oxidase of Rat Liver Nuclei and Nucleoli.....	156
E. McEVoy-BOWE. The Pyridoxal Catalyzed Cleavage of Tryptophan.....	167
DAISY M. HARRIS AND J. M. SALTER. Report of a Component(s) in Blood that Accelerates Urea Synthesis by Surviving Liver Slices from Rats when L-Amino Acids Are the Sources of Urea Nitrogen.....	173

CAROL H. LETENDRE AND LOUISE J. DANIEL. Some Aspects of Thymine Biosynthesis in <i>Ochromonas malhamensis</i>	182
JANICE MAYSHAK, O. C. YODER, KATHRYN C. BEAMER, AND DAMON C. SHELTON. Inhibition and Transport Kinetic Studies Involving L-Leucine, L-Valine, and Their Dipeptides in <i>Leuconostoc mesenteroides</i>	189
A. K. PRINCE. Spectrophotometric Study of the Acetylcholinesterase-Catalyzed Hydrolysis of 1-Methyl-Acetoxyquinolinium Iodides.....	195
M. BÁRÁNY, K. BÁRÁNY, E. GAETJENS, AND G. BAILIN. Chicken Gizzard Myosin..	205
ANTONIO HERNANDEZ AND ROBERT K. CRANE. The Association of Heart Hexokinase with Subcellular Structure.....	223
FREDERICK C. KOPFLER AND THOMAS L. McMEEKIN. Solubilities of the Derivatives of β -Lactoglobulins A and B Produced by Action of Carboxypeptidase A.....	230
WILLIAM R. EVANS AND ANTHONY SAN PIETRO. Phosphorolysis of Adenosine Diphosphoribose.....	236
LETTERS TO THE EDITORS	
FRANCO GAZZARRINI AND BARTHOLOMEW NAGY. Saturated Hydrocarbons in Human Femoral Arterial Tissues and Plaques.....	245
G. A. HAYDEN, S. C. ROGERS, AND F. FRIEDBERG. Radiation Degradation of Polyamino Acids in the Solid State.....	247
KATSUMI HATA, WALTER J. SCHUBERT, F. F. NORD. Fungal Degradation of the Lignin and Phenolic Acids of the Bark of Western Pine.....	250
KENNETH I. H. WILLIAMS, SUMNER H. BURSTEIN, AND DONALD S. LAYNE. Dimethyl Sulfone: Isolation from Human Urine.....	251
List of Forthcoming Papers.....	253
Author Index.....	254

NUMBER 2, FEBRUARY 1966

NABA K. GUPTA AND BIRGIT VENNESLAND. Glyoxylate Carboligase of <i>Escherichia coli</i> : Some Properties of the Enzyme.....	255
JOSÉ MORDOH, CLARA R. KRISMAN, AND LUIS F. LELOIR. Further Studies on High Molecular Weight Liver Glycogen.....	265
ELENA CRISTEA. Effect of Amytal, Pyridine Nucleotides, and Oxaloacetate on the Respiratory Inhibition-Activation Cycles in Mitochondria.....	273
R. A. ALARCON. Acrolein. II. Studies on the Fluorescences Produced by Acrolein, Spermine, and Related Compounds with Resorcinol plus Calf Serum.....	281
RALPH G. YOUNT, SHERRY SIMCHUK, IDA YU, AND MARGARET KOTTKE. Adenosine-5'-Sulfatopyrophosphate, an Analogue of Adenosine Triphosphate. I. Preparation, Properties, and Mode of Cleavage by Snake Venoms.....	288
RALPH G. YOUNT, IDA YU, AND SHERRY SIMCHUK. Adenosine-5'-Sulfatopyrophosphate, an Analogue of Adenosine Triphosphate. II. Interaction with Myosin, Actomyosin, and Muscle Fibers.....	296
M. WAKS AND A. ALFSEN. Structural Studies of Haptoglobins. I. Hydrogen Ion Equilibria and Optical Rotatory Dispersion of Hp 1-1 and Hp 2-2.....	304
VARDA KAHN AND J. J. BLUM. The Intracellular Nucleotides of <i>Astasia longa</i>	315
F. A. HOMMES. Mechanism of the Crabtree Effect in Yeast Grown with Different Glucose Concentrations.....	324
H. A. DOUTHIT AND R. L. AIRTH. Thiaminase I of <i>Bacillus thiaminolyticus</i>	331
D. J. R. LAURENCE, D. M. P. PHILLIPS, AND J. A. V. BUTLER. A Comparison of Histone Fractions from an 'Osteogenic' Rat Tumor and Calf Thymus.....	338
W. GODSCHALK AND H. VELDSTRA. Investigations on Turnip Yellow Mosaic. Virus Interactions with Aliphatic Mercurials. II. Conformational Changes in the Protein.....	347
RAJA I. TANNOUS, QUINTON R. ROGERS, AND ALFRED E. HARPER. Effect of Leucine-Isoleucine Antagonism on the Amino Acid Pattern of Plasma and Tissues of the Rat.	356
TSUNEO YAMANE, TADAKATSU KATO, SHOICHI SHIMIZU, AND SABURO FUKUI. Comparison of Reactivity between D-Propanediol and L-Propanediol in Intramolecular	

Oxidation-Reduction Catalyzed by Dioldehydrase Requiring Cobamide Co-enzyme.....	362
I. D. RAACKE, J. FIALA, AND S. MATSUSHITA. Ribonucleoside Triphosphatase in Rabbit Reticulocytes.....	367
HIROO HORINISHI, OSAMU TAKENAKA, AND KAZUO SHIBATA. States of Amino Acid Residues in Proteins. IX. Histidine Residues in Ribonuclease in the Presence of Cytidine and Uridine-3'-Phosphates as Observed with Diazonium-1-H-Tetrazole....	371
K. P. GOPINATHAN, T. RAMAKRISHNAN, AND C. S. VAIDYANATHAN. Purification and Properties of an Inhibitor for Nicotinamide-Adenine Dinucleotidase from <i>Mycobacterium tuberculosis</i> H ₃₇ Rv.....	376
SUNE FREDERIKSEN. Specificity of Adenosine Deaminase Toward Adenosine and 2'-Deoxyadenosine Analogues.....	383
RALPH W. MCKEE, SUE C. FRARY, AND D. H. KOOPS. Necessity of Substrates for the Crabtree Effect in Ehrlich-Lettre Carcinoma Cells.....	389
S. S. HOTTA. Effect of Chlorpromazine and Amytal on the Reduction of Glutathione..	395
JOHN J. GAVIN, FRANK F. EBETINO, R. FREEDMAN, AND W. E. WATERBURY. The Aerobic Degradation of 1-(5-Nitrofurfurylideneamino)-2-Imidazolidinone (NF-246) by <i>Escherichia coli</i>	399
ROBERT M. HILL AND ALICE ELLIOTT. Properties of Urease Fractions Separated on CM-Cellulose.....	405
JOEL BITMAN, LOIS A. TREZISE, AND HELENE C. CECIL. Effect of Cycloheximide (Actidione) on the Glycogen Content of the Rat Uterus.....	414
D. J. WINZOR. Detection of Interaction in Gluten Extracts by Gel Filtration.....	421
T. H. J. HUISMAN. Studies on the Heterogeneity of Hemoglobin. XI. Chromatographic Studies of Intermediate Forms of Oxy- and Ferrihemoglobin.....	427
ARIEL G. LOEWY, SLAVICA MATAČIĆ, AND JOHN H. DARNELL. Transamidase Activity of the Enzyme Responsible for Insoluble Fibrin Formation.....	435
EZZAT S. YOUNATHAN. The Effect of Alloxan on Mitochondrial Adenosinetriphosphatase Activity and the ATP-ADP Exchange Reaction.....	439
ETSURO SUGIMOTO, RYUZO SASAKI, AND HIDEO CHIBA. Reversible Urea Denaturation of Crystalline Yeast Phosphoglyceric Acid Mutase.....	444
WILFRED NIELS ARNOLD. A Column Method for Enzymic Characterization of Coarse Cellular Fractions: Application to Insoluble β -Fructofuranosidase from Grape....	451
V. RAISYS, J. MOLNAR, AND RICHARD J. WINZLER. Study of Carbohydrate Release During the Clotting of Fibrinogen.....	457
R. C. BURNS AND W. A. BULEN. A Procedure for the Preparation of Extracts from <i>Rhodospirillum rubrum</i> Catalyzing N ₂ Reduction and ATP-Dependent H ₂ Evolution.....	461
A. O. M. STOPPANI, M. N. SCHWARCZ, AND C. E. FREDA. Action of Zinc-Complexing Agents on Nicotinamide Adenine Dinucleotide-Linked Aldehyde Dehydrogenases from Yeast and Liver.....	464
OTTAVIO BARNABEI, BRUNA ROMANO, GIOVANNA DI BITONTO, VITTORIO TOMASI, AND FABIO SERENI. Factors Influencing the Glucocorticoid-Induced Increase of Ribonucleic Acid Polymerase Activity of Rat Liver Nuclei.....	478
H. BAUM, E. MURER, D. B. SLAUTTERBACK, AND D. G. MCCONNELL. Association of Integrated Metabolic Pathways with Membranes. II. Electron Micrographic Studies on Glycolytically Active Preparations from Erythrocytes.....	487
LETTERS TO THE EDITORS	
B. MONDOVÌ, P. TURINI, A. SCIOSCIA-SANTORO, AND D. GIARNIERI. The Chromatographic Heterogeneity of Cystathionase.....	496
TADASHI ASAHI, YUJI HONDA, AND IKUZO URITANI. Increase of Mitochondrial Content in Sweet Potato Root Tissue After Wounding.....	498
PAMELA M. TAYLOR AND W. J. WHELAN. A New Substrate for the Detection of Amylo-1, 6-Glucosidase, and its Application to the Study of Glycogen-Storage Disease Type III.....	500
GARY D. GRAY. Tryptophan Pyrrolase Activity: Effects of Cyclic-AMP, Purines, Pyrimidines, Nucleosides, and Nucleotides.....	502
List of Forthcoming Papers.....	505
Errata.....	506

JOHN T. PENNISTON, HAROLD VANDE ZANDE, AND DAVID E. GREEN. Mitochondrial Particles Resolved for Ion Translocation. I. Preparation and Properties of a Particle Coupled Only at Phosphorylation Site III of the Electron Transfer Chain.....	507
JOHN T. PENNISTON, HAROLD VANDE ZANDE, AND DAVID E. GREEN. Mitochondrial Particles Resolved for Ion Translocation. II. Extraction of Cofactors and Restoration of Activity.....	512
LUDMILA SZARKOWSKA. The Restoration of DPNH Oxidase Activity by Coenzyme Q (Ubiquinone).....	519
JOSEPH D. ROBINSON. Structural Changes in Microsomal Suspensions. IV. Effects of Ions.....	526
PABLO VALENZUELA, ENRIQUE BEYTÍA, OSVALDO CORI, AND ARTURO YUDELEVICH. Phosphorylated Intermediates of Terpene Biosynthesis in <i>Pinus radiata</i>	536
PETER Z. ALLEN AND MARTIN MORRISON. Lactoperoxidase. VI. Immunochemical Studies on Lactoperoxidase from the Milk of Several Species.....	540
C. K. RAMAKRISHNA KURUP, C. S. VAIDYANATHAN, AND T. RAMASARMA. NADH Oxidase System of <i>Agrobacterium tumefaciens</i>	548
F. P. ZSCHEILE, JR. Correlation of Spectroscopic Observations on Polyenes with Ripening of Tomato Fruits.....	554
FREDERICK G. WALZ, JR. AND P. C. CHAN. Adenosine Triphosphate-Dependent Retention of Sodium Ions by a Sodium and Potassium-Activated Adenosine Triphosphatase Preparation from Erythrocyte Membranes.....	569
MABELLE E. ADAMS-MAYNE AND BRUNO JIRGENSONS. Purification and Characterization of Four Bence-Jones Proteins.....	575
S. LEWIN. Reaction of Salmon Sperm Deoxyribonucleic Acid with Formaldehyde....	584
GEORGE LUST AND LOUISE J. DANIEL. The Biosynthesis of the Methyl Groups in Choline in <i>Ochromonas malhamensis</i>	603
B. S. REDDY AND B. S. WESTMANN. Intestinal Disaccharidase Activities in the Growing Germfree and Conventional Rats.....	609
ARSELIO CARVALHO AND YIGAL AVIVI. Effects of Zinc on Adenosine Triphosphatase Activity and Superprecipitation of Actomyosin from Skeletal Muscle of Rabbit..	617
ROGER F. PALMER, KENNETH C. LASSETER, AND SUZANNE L. MELVIN. Stimulation of Na ⁺ and K ⁺ Dependent Adenosine Triphosphatase by Ouabain.....	629
TAGE ASTRUP, UWE NISSEN, AND JØRGEN RASMUSSEN. Effects of Preparations of Heparin and Heparitin Sulfate on Fibrinolysis.....	634
KINJIRO MIYAGAWA. Studies on Taka-Amylase A under High Pressure. IV. Influence of Initial Concentration of Enzyme upon Pressure Inactivation and Reactivation.....	641
P. H. W. BUTTERWORTH, H. H. DRAPER, F. W. HEMMING, AND R. A. MORTON. <i>In Vivo</i> Incorporation of [2- ¹⁴ C]-Mevalonate into Dolichol of Rabbit and Pig Liver..	646
STEPHAN LUDEWIG AND ELIZABETH S. GLOVER. Hemosiderin (III): Determination of Sialic Acid and the Components of a Carbohydrate Complex.....	654
STEPHAN LUDEWIG AND ELIZABETH S. GLOVER. Hemosiderin (IV): Effect of Iron on the Determination of Bound Sialic Acid and on Deoxyribose.....	661
RUSSELL PRESSEY. Separation and Properties of Potato Invertase and Invertase Inhibitor.....	667
EDWARD J. HEHRE AND HIROSHI SUZUKI. New Reactions of Dextranucrase: α -D-Glucosyl Transfers to and from the Anomeric Sites of Lactulose and Fructose....	675
WAYNE L. RYAN AND WILLIAM ORR. Phenylalanine Conversion to Tyrosine by the Human Fetal Liver.....	684
DAVID T. LINDSAY. Electrophoretically Identical Histones from Ribosomes and Chromosomes of Chicken Liver.....	687
PARK S. NOBEL AND HOWARD C. MEL. Electrophoretic Studies of Light-Induced Charge in Spinach Chloroplasts.....	695
R. H. STEAD, H. J. H. DE MUELENAERE, AND G. V. QUICKE. Trypsin Inhibition, Hemagglutination, and Intraperitoneal Toxicity in Extracts of <i>Phaseolus vulgaris</i> and <i>Glycine max</i>	703

MICHAEL G. MAGE AND EDWARD T. HARRISON. A Comparison of the Labile Disulfide Bonds of Rabbit γ G-Immunoglobulin Fragments.....	709
JOSEPH P. LIBERTI, JOHN C. COLLA, JOHN F. VAN PILSUM, AND FRANK UNGAR. The Effect of Growth Hormone on Enzyme Activities in the Hypophysectomized Rat .	718
DAVID B. SMITH, MAURIZIO BRUNORI, ERALDO ANTONINI, AND JEFFRIES WYMAN. The Oxygen Bohr Effect in Mouse Hemoglobin.....	725
YOSHIHIKO FUJITA AND JACK MYERS. Cytochrome c Redox Reactions Induced by Photochemical System 1 in Sonicated Preparations of <i>Anabaena cylindrica</i>	730
YOSHIHIKO FUJITA AND JACK MYERS. Comparative Studies of Cytochrome c Redox Reaction by Photochemical Lamellar Preparations Obtained from Blue-Green, Red and Green Algae, and Spinach Chloroplasts.....	738
MEIR WILCHEK, ASHER FRENSDORFF, AND MICHAEL SELA. New Synthesis of Poly-L-Glutamic Acid and Poly-L-Glutamyl Proteins.....	742
WILLIAM SEGAL. Enhancement of Succinate Oxidation in Lung and Liver Mitochondria of Tuberculous Mice.....	750
LETTER TO THE EDITORS	
K. JANAKIDEVI, VIRGINIA C. DEWEY, AND G. W. KIDDER. Serotonin in Protozoa.....	758
Book Reviews.....	760
Announcement.....	762
List of Forthcoming Papers.....	763
Author Index.....	764
Subject Index.....	767
Index of Book Reviews.....	770
Books Received for Review.....	770

